

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference MOL0667-PCT		FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/B 03/03654	International filing date (day/month/year) 14.08.2003 ✓	Priority date (day/month/year) 20.08.2002 ✓	
International Patent Classification (IPC) or national classification and IPC C23C24/08			
Applicant MOLTECH INVENT S.A. et al. ✓			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 18.03.2004 ✓		Date of completion of this report 26.11.2004	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Brisson, O Telephone No. +49 89 2399-8449 	

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Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-15 as originally filed

Claims, Numbers

1-32 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:
- ☐ the entire international application,
 - ☒ claims Nos. 18-21.32
- because:
- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):
 - ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
 - ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
 - ☒ no international search report has been established for the said claims Nos. 18-21, 32
 - ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
 - the written form ☐ has not been furnished
 - ☐ does not comply with the standard
 - the computer readable form ☐ has not been furnished
 - ☐ does not comply with the standard
 - ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.
 - ☐ See separate sheet for further details

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-17, 22-31
	No: Claims	
Inventive step (IS)	Yes: Claims	1-17, 22-31
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-17, 22-31
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:

- D1: WO 00/11243 A (NORA VITTORIO DE ;DURUZ JEAN JACQUES (CH);
MOLTECH INVENT SA (LU)) 2 March 2000 (2000-03-02)
D2: US 2001/020590 A1 (DE NORA VITTORIO ET AL) 13 September 2001
(2001-09-13)

2. Any of the documents D1 or D2 can be regarded as the closest prior art to the subject-matter of claim 1. Both documents show (see references in the search report): Methods of forming a hematite-containing protective layer on a metal-based substrate such as an anode for aluminium electrowinning. Both methods can be distinguished from the present method in that:

- i) as alternative starting materials, D1 and D2 present the use of iron oxide particles, particles of a precursor of iron oxide such as iron metal or a mixture of both (see D1, page 11, lines 26-31 and D2, paragraph [0049])**
- ii) in the case where iron and iron oxide particles are both used, no specific mass ratio of the iron and iron oxide particles to be applied onto the substrate is mentioned in D1 or D2.**

The subject-matter of claim 1 as well as its dependent claims 2-17, 22-31 is therefore new (Article 33(2) PCT) with regard to the teaching of D1 or D2.

3. The problem to be solved by the present invention may be regarded as to optimize the density and to minimize the formation of cracks in the layer to be formed, and thus to improve impermeability of the deposited layer to oxygen.

4. This problem is solved by the present invention as defined in claim 1 by sintering on a metal-based anode substrate a particle mixture of iron and/or iron oxides according to the specific ratio defined in claim 1.

5. Since D1 and D2 make no difference between iron oxide particles and their precursors for producing an anode coating, the skilled person can find no technical incentive to prefer one to the other or to a mixture of both. A fortiori, there is no suggestion whatsoever to combine these materials in the ratios defined in claim 1 to

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provide the sought effect, i.e. inhibit the formation of cracks in the coating. Therefore, the subject-matter of claims 2-17, 22-31 involves an inventive step (Article 33(2) PCT) with regard to the teaching of D1 and/or D2.